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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,476	04/12/2004	Gregory S. Heady	FRON-10193	4582
7590	10/13/2006			
David E. Allred Schmeiser, Olsen & Watts LLP 18 East University Drive, #101 Mesa, AZ 85201			EXAMINER HOFFBERG, ROBERT JOSEPH	
			ART UNIT 2835	PAPER NUMBER

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/823,476	Applicant(s) HEADY, GREGORY S.	
	Examiner Robert J. Hoffberg	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16, 17, 21, 22, 26, 27, 30, 31, 37-39, 42-45 and 48 is/are rejected.
- 7) ☒ Claim(s) 18-20, 23-25, 28, 29, 32-36, 40, 41 and 46-47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Arguments

1. Applicant's arguments with respect to claim 16-35 have been considered but are moot in view of the new ground(s) of rejection.

Specification

2. The disclosure is objected to because of the following informalities: Paragraph 2, line 14 (amended), change "11/456,808" to "10/823,477".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 16-17, 21-22, 30-31, 37 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Li (US 2002/0195230).

With respect to Claims 16-17, 21-22 and 37, Li teaches a heat collector, comprising: a heat sink (#3) including a plate (see Fig. 3) of heat conductive material (Para. 0001, line 3); a longitudinal recess (see Fig. 2) in the plate of material; and at least a gas phase line (#22) in the recess (claim 16), a liquid phase line (#26) in the recess (claim 17), the liquid phase line is at least partially coextensive with (see Fig. 2) the gas phase line (claim 21), the liquid phase line extends along (see Fig. 2) a

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substantial portion of the gas phase line (claim 22) and wherein the longitudinal recess comprises a channel (for #22 in #3) (claim 37).

With respect to Claims 30-31, Li teaches a plurality of liquid phase and gas phase lines for a cooling system, comprising: an internal gas phase line (#22 in #3); an external gas phase line (#22) connected to the internal gas phase line; and an external liquid phase line (#24); wherein the external liquid phase line and the external gas phase line have substantially the same diameter (see Fig. 2) (claim 30), and an internal liquid phase line (#24 in #3) (claim 31).

With respect to Claim 48, Li teaches a heat collector, comprising: a heat sink (#3) including a solid mass of heat conductive material (Para. 0001, line 3); a longitudinal recess (See Fig. 2) forming a channel in the solid mass of heat conductive material; a gas phase line (#22) in the channel; and a liquid phase line (#24) in the channel.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 26-27, 39 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 2002/0195230).

With respect to Claims 26-27, Li teaches the claimed invention except for a composite line. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a duplicate the gas phase line creating a

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composite line and receiving both lines in a recess, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

With respect to Claim 39, Li teaches the claimed invention except for a thermally conductive material. Regarding the thermally conductive material, official notice is taken of the fact that the thermally conductive material to improve heat conductivity between two thermally connected parts is notoriously known in the art at the time of the invention; therefore, it would have been obvious to use them in any desirable way including as claimed.

With respect to Claims 42-43, Li teaches the claimed invention except for that the gas phase line or the liquid phase line is at least partially formed by a portion of the plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the a portion of the gas phase line or liquid phase line integral with the channel and eliminate the liquid phase line inside the channel, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

7. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 2002/0195230) in view of Khrustalev et al. (US 6,536,510).

Li teaches the claimed invention except for the serpentine channel and gas line fitting in the serpentine channel. Khrustalev et al. teach the channel (#120) is serpentine (see Fig. 16) and the gas phase line is serpentine and fits into (see Fig. 16)

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the channel. It would be obvious at the time of the invention to modify the heat collector of Li with the serpentine channel of Khrustalev et al. to provide for increase channel length for the evaporation process.

8. Claims 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US 2002/0195230) in view of Budelman (US 5,394,936).

Li teaches the claimed invention except for a heat sink cover plate and the fastener holes. Budelman (US 5,394,936) teach a heat sink cover plate (#140) mounted to the plate of heat conductive material (#110) with at least a portion of the gas phase line between (see Fig. 1) the heat sink cover plate and the plate of heat conductive material (claim 44) and through holes (#143) in the heat conductive material for receiving fasteners therethrough (claim 45). It would be obvious at the time of the invention to modify the heat collector of Li with the cover plate of Budelman to provide an economical means to fabricate a heat sink in two parts permitting a channel to be placed in the interior of the heat sink and providing a means to assembly the two pieces together.

Allowable Subject Matter

9. Claims 18-20, 23-25, 28-29, 32-36, 40-41, 44-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claims 18, 32, 40 and all claims dependent thereof are allowable over the art of

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record because the prior art does not teach or suggest a liquid phase line disposed inside of, coincidental with a gas phase line. Claims 23 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest an opening on the first end plate being an inlet and outlet opening. Claim 28 and all claims dependent thereof are allowable over the art of record because the prior art does not teach or suggest a manifold for uniting a separate gas phase line and a separate liquid phase line into the composite line and the manifold having a combined gas phase and liquid phase connection fluidly connected to the composite line. The aforementioned limitations in combination with all remaining limitations of the respective claims are believed to render said claims 18, 23, 28 and 40 and all claims dependent thereof patentable over art of record.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Harvey (US 3,283,811) teaches a liquid phase line is disposed inside a gas phase line.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH *RJH*

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER

Michael Datskovskiy
10/11/06